Abstract
Malaria affects more than 300 million humans a year. A PubMed literature search using the MeSH phrases “quality of life” and “malaria” identified 28 articles. The conclusions from the study were that malaria affects quality of life through its impact on family and community income, through its effect on shortening the lives of children and family members, and through neurological side effects that affect a child’s ability to learn and become self-sufficient.


Results and Discussion
The WHO has on its web-site: “There is general agreement that poverty not only increases the risk of ill health and vulnerability of people, it also has serious implications for the delivery of effective health-care such as reduced demand for services, lack of continuity or compliance in medical treatment, and increased transmission of infectious diseases.”(7) Living in poverty is associated with several indicators of health-related quality of life, including depression.(4-6)

Poverty impacts humans individually, as families lose work time to care for the ill, sending themselves deeper into poverty. It increases anxiety in family members and, when large numbers of adults cannot work, ultimately affects entire villages, towns, and countries.(7) Conversely, having a paid job significantly increases one’s satisfaction with life, while a basic condition for improving the lives of parents is the opportunity for better employment.(8)

Strong evidence links poverty to malaria and malaria to poverty.(1) An analysis reported in 2001 by Gallup and Sachs found that countries with severe malaria in 1965 had growth 1.3% lower a year on average, taking into account initial income level, overall health, and tropical location. Overall, they estimate, malaria costs African nations $12 billion a year.(9) African families may spend up to 25% of their annual income on malaria prevention and treatment.(10)

In 2006, the Nigerian chief malariologist attributed the loss of national income of approximately N132 billion (US $1 billion) annually to the disease. He blamed it for high absenteeism in school and work, and noted that it “causes great misery to sufferers and adversely affects the social and psychological well-being of individuals, families, communities, and the nation as a whole.”(11)

In nearly every country or region in which malaria is eradicated, significant growth is observed. An example is the United States in the 1940s. Before World War II, malaria afflicted over 100,000 humans each year in the southern states, and killed thousands. After drainage and insecticide spraying during the Depression and after the discovery of DDT, disease incidence was nearly eliminated. Throughout the 1950s the southern states grew from a per capita income of 60% of the rest of the United States to
have reduced quality of life. (16,17) (See EC Pierce,
years. (14) Humans so afflicted and their parents
where median survival is estimated at about 5
(14,15) No mortality figures are available for Africa,
and the Caribbean of between 45 and 55 years.
Homozygosity leads to sickle cell disease and a
painless, shortened life. Improved medical care has
led to a median survival in North America, Europe
and Africa which was 11% by 1940, and it became the third most important copper ore
producer in the world. (12)
The efforts to eradicate malaria in Northern
Rhodesia were estimated to save $8.29 million in
costs related to lost work time. (12) The additional
working days translated into improved economic
conditions for workers and their service providers,
improving for all the overall quality of life.
Calculations indicated that malaria control led to
increased copper mining revenues, and increased
taxable income in Zambia; without this control the
percentage of national income derived from copper
mining would have been 37% lower. (12)
Other indications of the program's effect on quality
of life stemmed from the increase in length of
employment and the growth in the number of mar-
rried couples in the regions as men felt secure and
safe enough to bring their wives and children to live
with them. Having such a healthy labor force at that
time contributed to social and economic develop-
ment. (12)
Today, mining still significantly contributes to
Zambia's economy. In 2004, the government nation-
alized the mines, which were in poor shape due to
the collapse of worldwide copper prices. Since then
mine production has increased and has the potential
to significantly improve the country's overall eco-
nomic status. (13)
SICKLE CELL DISEASE AND QUALITY OF LIFE
In tropical regions of the world where malaria is
demic, humans are most likely to also be het-
arozygous for the sickle-cell trait. (14)
Homozygosity leads to sickle cell disease and a
painful, shortened life. Improved medical care has
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and the Caribbean of between 45 and 55 years.
(14,15) No mortality figures are available for Africa,
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years. (14) Humans so afflicted and their parents
have reduced quality of life. (16,17) (See EC Pierce,
years.)

IMPACT OF MALARIA ON CHILDREN'S LEARNING ABILITY
Children in sub-Saharan Africa are those most afflic-
ted by malaria, where it contributes to an estimated
1 in 5 of all deaths of children. (18) WHO data shows
that these children are particularly susceptible to
malaria and cerebral malaria, which afflicts an estimated 0.61%
of them under 5, and 0.26% from children 5 to 9
years of age, and kills 0.017% overall. Nearly 10%
of surviving children have neurological problems,
including blindness, severe cerebral palsy, deafness,
ataxia, speech problems, cognitive impairment,
epilepsy, hemiplegia, and hemiparesis. Although
most symptoms disappear within 6 months, they are
permanent in approximately 25% of surviving chil-
dren. (19)
The cognitive deficits affect children during an
important growth phase of the brain, when areas
involved in higher-level learnings, such as planning,
decision-making, self-awareness, and social sensitiv-
ity mature. These deficits also occur during the early
education years, when children learn to read and
figure. They also have significant effects on families,
impacting the child's ability to contribute physically
to the family and putting additional strain on parents
who must care for a significantly disabled child (and,
later, adult). (20)
Unrecognized neurological deficits impact a child's
overall ability to learn and function. In a study of
cerebral malaria survivors, 87 were assessed 3 to 4
years after discharge from hospital. The IQs of 14%
of the survivors were more than 2 standard devia-
tions from the control mean IQ. Similarly low IQs
were measured in 5% of children who had never
been diagnosed with cerebral malaria. (21) In
Nigeria, a study resulted in the calculation that 2%
of children surviving cerebral malaria had learning
problems and disabilities. (11)
OTHER MALARIAL COMPLICATIONS
Repeated malarial infections plus starvation and
malnutrition cause severe anemia in children, and an
estimated 190,000 to 974,000 deaths a year in chil-
dren under 5 years. (18,19) Malarial anemia may
lead to cognitive, learning and behavior deficits. (20)
The unavailability of equipment for blood transfu-
sions and the fact that HIV is carried in blood often
eliminates blood transfusion as treatment. (22)
Children may also have respiratory and metabolic
symptoms including hypoglycemia, pulmonary
edema, and malaria hyperpneic syndrome. (23)
In sub-Saharan Africa, a WHO study estimates that
12% of low birthweight babies are delivered to
malaria-infected pregnant women. (24) The mortal-
ity rate of these newborns is estimated at 0.78 to
4.52% of live births. (25) Quality of life is poor in
these babies into adulthood because of cognitive,
mobility, self-care, and sensation limitations. (26,27)
These studies of quality of life were reported from
the United States, where children spent time in neonatal care facilities. Consequently, the quality of life for babies born in Africa who survive past their first year is likely to be worse because of more limited access to appropriate medical care.

Conclusions

Malaria wreaks economic and social havoc on the nations of sub-Saharan Africa. The economic cost is great, as is the cost to the quality of life.

References